

THE
PSYCHOLOGICAL BULLETIN

PROCEEDINGS OF THE SEVENTEENTH ANNUAL MEETING OF THE AMERICAN PSYCHOLOGICAL ASSOCIATION, BALTIMORE, DECEMBER 29, 30 AND 31, 1908.

REPORT OF THE SECRETARY.

The seventeenth annual meeting of the American Psychological Association was held in Baltimore on Tuesday, Wednesday and Thursday, December 29, 30 and 31, 1908, under the auspices of the Johns Hopkins University and in conjunction with the American Philosophical Association, the Southern Society for Philosophy and Psychology, and other societies affiliated with the American Association for the Advancement of Science. About the usual number of members was in attendance. The Southern Society very kindly placed its sessions so that its members could be free to follow the principal portions of our program.

All sessions were held in Levering Hall, at which place everything that could conduce to the comfort and convenience of the attending members was provided by the Department of Philosophy and Psychology of the University.

A number of papers announced on the program were necessarily omitted because of the unavoidable absence of their writers, but there was no lack of material to occupy the time of the various sessions.

On Monday evening, December 28, a reception was tendered to the visiting societies by the president and the board of trustees of Johns Hopkins University.

On Tuesday morning, December 29, at ten o'clock, the meeting was formally opened by the president, Mr. Stratton. After the usual preliminary announcement of the council's nominations for officers, the reading of the papers was begun.

A large part of the afternoon session of Tuesday was devoted to

the report of the Committee on Measurements, which was presented by the chairman, J. R. Angell, and by several of those who have been associated with him in this work.

On Wednesday morning, December 31, a joint session was held with Section L (Education) of the American Association for the Advancement of Science, the six papers of which were interesting contributions to the experimental side of applied psychology.

In the afternoon of Wednesday was held a joint session with the Southern Society for Philosophy and Psychology. Following this joint session came the address of the President on 'The Betterment of Rival Types of Explication.' The Philosophical Association adjourned to listen to this address.

On Wednesday evening President Hugo Münsterberg of the American Philosophical Association delivered his address on 'The Problem of Beauty.' This was followed by a joint smoker with the American Philosophical Association and the Southern Society for Philosophy and Psychology held at the Johns Hopkins Club.

On Thursday morning the annual business meeting was held, after which the remainder of the day was devoted to papers and discussions, the afternoon session adjourning for the address of President J. McBride Sterrett of the Southern Society on 'The Proper Affiliation of Psychology.'

At the close of the last session an excellent type of audiometer was demonstrated to those interested in the matter by Mr. J. M. McCallie, of Trenton, N. J.

Abstracts of the various papers will be found below.

At the annual business meeting, held Thursday forenoon, the following business was transacted.

The following officers, nominated by the council, were elected: *President* for 1909, Professor Charles H. Judd, of Yale University; *Members of the Council to serve three years*, Professor E. C. Sanford, of Clark University, and Professor E. L. Thorndike, of Teachers College, Columbia University; *Member of the Council to serve one year*, Professor E. H. Lindley, of Indiana University.

On nomination by the Council the following candidates were elected to membership: Charles Scott Berry, Ph.D., University of Michigan; W. V. D. Bingham, Ph.D., Teachers College, Columbia University; Frederick E. Bolton, Ph.D., State University of Iowa; Foster B. Boswell, Ph.D., Hobart College; Warner Brown, Ph.D., University of California; W. Trigant Burrow, M.D., Johns Hopkins University; Lawrence W. Cole, A.M., Wellesley College; Herbert B.

Davis, Ph.D., State Normal School, California, Pa.; Clarence E. Ferree, Ph.D., Bryn Mawr College; Henry H. Goddard, Ph.D., New Jersey Training School for Feeble-Minded Girls and Boys; Arthur Holmes, Ph.D., University of Pennsylvania; Anna J. McKeag, Ph.D., Wellesley College; Haywood J. Pearce, Ph.D., Brenau College; James Bissett Pratt, Ph.D., Williams College; Daniel Starch, Ph.D., University of Wisconsin; Karl T. Waugh, Ph.D., University of Chicago.

The treasurer's report, audited by the council, was read and approved.

The proposed amendment to the constitution, acted upon and adopted at the previous annual meeting of the association, was, in accordance with Article VII. of the constitution, again brought before the association for action. The amendment is as follows: Making the present Article III. to be Article III., Section 1; and inserting the following as Section 2:

"In case of the death, disability, or resignation of either of these officers, the council shall appoint a successor to serve until the next annual meeting of the association."

It was again voted to adopt this amendment, and it accordingly becomes a part of the constitution of the association.

It was voted to adopt the council's recommendation that a committee be appointed to gather materials for a discussion before the association, presumably at its next annual meeting, on the topic: 'Methods of Teaching Psychology.'

It was voted that a committee of five be appointed for this purpose by the chair. The president later appointed the following: C. E. Seashore, *chairman*; J. R. Angell, M. W. Calkins, E. C. Sanford, G. M. Whipple.

It was voted that the council be authorized to make an expenditure of \$150, or such part thereof as shall be necessary, to defray the expenses of publishing the results of the work of the Committee on Measurements; it being understood that a copy of such publication be sent to each member of the association without charge.

The council reported to the association an invitation from the Department of Philosophy and Psychology of Yale University to hold its next annual meeting at New Haven. It was moved and seconded that this invitation be accepted. After discussion of the matter, in view of the fact that the American Association for the Advancement of Science is to meet in Boston at that time, it was voted that the above motion be referred to the council, with power to act, with the suggestion that

their action be guided by information obtained from the entire membership of the association. (The decision of the council will be announced at a later date in the news items of the *PSYCHOLOGICAL BULLETIN* and other periodicals.)

Professor Baldwin presented the following resolution which was being acted upon by the American Association for the Advancement of Science and Affiliated Societies: "Resolved that this Association most urgently recommends to the Committee on Ways and Means, or other body having the matter in charge, that the present duty on scientific books published in English be removed." This resolution was unanimously adopted.

On motion of Mr. Seashore that the president and secretary be asked to confer with the council of the American Association for the Advancement of Science in reference to the advisability of forming a separate Section of Psychology, it was voted, after considerable discussion, to refer this motion to the council for report.

Professor Judd was appointed the representative of this association on the council of the American Association for the Advancement of Science.

It was voted that the council be authorized to expend an amount, not to exceed \$20, to defray express charges on apparatus to be used for purposes of demonstration at the next annual meeting.

It was voted that an expression of thanks be extended to the Department of Philosophy and Psychology of Johns Hopkins University for its hospitality on the occasion of this meeting.

It was voted that the proceedings of this meeting be printed.

REPORT OF THE TREASURER FOR 1908.

DR.

To Balance from 1907 meeting.....	\$2,837.86
Dues received from members.....	219.35
Interest from July 1, 1907, to July 1, 1908.....	106.90
	<hr/> \$3,164.11

CR.

Stationery and printing.....	\$ 57.19	
Clerical assistance.....	6.95	
Postage.....	31.15	
Travelling expenses (1906 and 1907).....	98.50	
Exchange on checks.....	.90	
Petty cash.....	1.39	
Petty cash on hand.....	10.02	206.10

Balance in Union Dime Savings Institution.....	\$2,753.64	
Balance in Fifth Avenue Bank.....	204.37	2,958.01
		<u>\$3,164.11</u>

NORTHAMPTON, December 18, 1908.

A. H. PIERCE,
Secretary and Treasurer.

Audited by the council.

ABSTRACTS OF PAPERS.

President's Address: The Betterment of Rival Types of Explication. GEORGE MALCOLM STRATTON.

(This address will be published in full in the *PSYCHOLOGICAL REVIEW*, Vol. XVI., No. 2, March, 1909.)

Further Experiments with Birds. JAMES P. PORTER.

Part I. — Experiments with a pair of ring-neck doves with the food-box (see page 257, *Amer. Jour. Psych.*, XVII.) show for the female practically the same results as for other birds. When the strings are changed to the opposite side of the door the female does not learn to open the box. The male shows no signs of imitation.

The work on color discrimination has so far followed the methods first used with birds (page 265 of reference cited above). In a cage in the Clark University laboratory, through the courtesy of Mr. Worthington, at the Society for the Investigation of Bird Life, Shawnee-on-Delaware, Pa., and at the Hadwen Arboretum, Worcester, Mass., many experiments with glasses covered with colored papers are in striking agreement by way of showing that both ring-neck and homing pigeons learn to discriminate almost perfectly in from one third to two fifths fewer trials than those required by the English sparrow. Their discrimination is not so good when only tints and shades of the same color are used. When tints replace the standard color they rarely confuse these with the other colors, or light or dark gray.

To discriminate forms many more tests are necessary than for color. With forms set in front of neutral gray glasses the same difficulty is found as with the form-boxes used in earlier work with other birds.

The homing pigeons with minor differences corroborate the findings with the ring-necks. Two young homing pigeons four months old were found to be erratic in their results, largely because they were distracted by the actions of other birds in other nearby cages.

In view of the fact that pigeons are said to be among the most

stupid of birds, the above tests seem to suggest the desirability of some such study as the above and the further prosecution of the same.

(The above is a report of work done by Mr. A. W. Kallom.)

Part II. — In the observation and experiments with two young single yellow head parrots (*Chrysotis ochrocephalous*) during the past ten months the following results have been obtained:

1. Well marked diurnal periods at morning and evening, particularly the latter, when these birds are very noisy, whistling, singing and cackling. This last would by many be called 'laughing.' The descriptions of the behavior of these birds in their native habitat confirm these observations.

2. Their behavior during the mating period points to the fact that we have in these birds probably as highly developed a social life as in any other bird. Guarding, protecting. The male is constantly biting and guarding the female as well as going through all sorts of showing-off performances.

3. Examples of sudden imitation occur in both, and, while some of these may be explained under the head of 'deferred imitation,' it is impossible for the writer to see at present how all cases may be so explained.

4. So long as the male was present the female showed about as little inclination to talk as the female song birds do to sing. This would seem to be due in part at least to the treatment accorded her by the male. With the male absent, the female does imitate but less perfectly and readily than the male.

5. Tests as to relative ability to learn are as yet inconclusive, but experiments with colored glasses indicate more rapid discrimination than that found for even the pigeons.

The Relation of Age, Sex and Condition of Stimulation to Habit Formation in the Dancing Mouse. ROBERT M. YERKES.

A quantitative investigation of the relation of age and sex of the dancing mouse to rapidity of acquisition of a habit involving visual discrimination has revealed the following facts:

1. The rapidity of habit formation depends upon, (a) the visual capacity of the individual, and (b) the associative memory of the individual. (That there are other internal factors, less important than these perhaps, is not denied.)

2. A given condition of visual discrimination varies in difficulty with the age and sex of the individual.

3. When the visual stimuli to be discriminated differ markedly

(easy discrimination), dancers of eight months of age acquire a habit more rapidly than do individuals of one month of age.

4. When the visual stimuli to be discriminated differ slightly (difficult discrimination), young individuals learn the more rapidly.

5. Averages for twenty males and the same number of females indicate that with a moderately difficult condition of visual discrimination, the females acquire a habit more rapidly than the males. The curves of habit formation for the sexes indicate certain important differences in the learning processes.

6. Rapidity of habit formation depends also upon the strength of the stimulus which is used as an incentive to or condition of learning (in these experiments an induced electric current). The conclusion at present indicated is that as the difficultness of visual discrimination increases the value of the optimal stimulus approaches the threshold.

7. The male dancer is somewhat more sensitive to the electric stimulus than the female. There are no marked differences in sensitivity to be correlated with age.

8. As the dancer ages (between one month and ten, at least), ability to discriminate by difference in luminosity appears either to diminish slightly or to be acquired less readily.

9. Associative memory, if anything, improves somewhat between the first and the tenth months of life.

10. In general, the investigation suggests the conclusion that the sense of vision of the dancing mouse can be educated to best advantage during the first few weeks of life, whereas associative ability can be trained to advantage somewhat later.

An Experimental Study of Imitation in Monkeys. M. E. HAGGERTY.

The investigation was carried on in the Harvard Psychological Laboratory and the New York Zoölogical Park. The experiments were all of one sort. The problem was to manipulate a mechanical device and get food. Each animal was allowed to try for itself at five different times for fifteen minutes at a time. Those which failed were allowed to see another animal perform the act and get the food, after which they were again permitted to try for themselves. There were seven different problems, and, in all, eleven cebus and macacus monkeys were used. In all there were twenty cases of repetition of the act observed, wholly or partially successful, as contrasted with five complete failures. Of the eleven animals used all but two exhibited imitative behavior.

The Temperature Sense in Squirrels. CLARENCE S. YOAKUM.

The paper reports tests with 'problem boxes,' the maze, and a new piece of apparatus for testing the temperature sense by the discrimination method. The gray squirrel learns in these experiments by the usual trial and error process. In all experiments emotional factors are more prominent in the actions of the squirrel than in those of the white rat. The higher emotional tone seems to be due to the relatively larger importance of the 'distance' receptors in the life of the squirrel. Both the gray squirrel and the white rat can form food associations on the basis of a temperature sense. The squirrel shows a ready ability to discriminate between boxes at temperatures of forty degrees and thirty degrees centigrade respectively.

The Phenomena of Peripheral Vision as Affected by Chromatic and Achromatic Adaptation with Special Reference to the After-image. G. M. FERNALD.

In a recent paper Professor Titchener¹ suggests that certain after-images reported by us² are due to chromatic adaptation. The reasons why we seem unable to accept this explanation for our results have already been given.³ The after-images in question, as well as a whole group of related phenomena, seem directly dependent on certain achromatic conditions.

Investigations completed but not published before Professor Titchener's criticism appeared show that certain colors appear more saturated and are distinguished at a greater degree of eccentricity under certain brightness conditions than under others. The most pronounced effects on the saturation in color tone are produced when the stimulus appears darker or lighter because of contrast with a light or dark background. A similar effect is produced on the saturation and color tone of the after-image by projecting it on a light or dark background, *i. e.*, different brightnesses of projection ground are particularly favorable to the different colors. The effect of observing the after-image on a totally darkened field, as in the dark room, is to completely obliterate it just as the color of the stimulus is lost when the stimulus is sufficiently darkened. Under certain brightness conditions chromatic

¹ E. B. Titchener and W. H. Pyle, 'On the After-Images of Subliminally Colored Stimuli,' *Proc. of the Amer. Philos. Soc.*, Vol. XLVII., No. 189, 1908.

² *PSYCHOL. REV.*, Vol. XII., 1905, pp. 386-425; Vol. XV., 1908, pp. 25-43. Also H. B. Thompson and K. Gordon, *PSYCHOL. REV.*, Vol. XIV., 1907, pp. 122-167.

³ *Journ. of Philos., Psychol. and Sci. Methods*, Vol. III., 1906, p. 352.

after-images follow unperceived color stimuli. These after-images occur when the stimulus color is so darkened by contrast with a white background that its limits are decreased and the after-image is projected on a screen whose brightness is especially favorable to the color of the after-image.

Two important points raised by Professor Titchener, which seem to us to require further investigation, are those concerning the method of determining zonal limits and the significance of irregularities at the periphery. The fact that Professor Baird's results, used by Professor Titchener,¹ as well as our own, show decided irregularities at the outer limits, seems to suggest that such variability is unavoidable.

Report of Committee on Measurements. JAMES R. ANGELL,
Chairman.

The committee on tests has made substantial progress during the past year and expects to be ready to publish at least a part of its findings during the coming year. To this end it has requested the association to authorize publication under such conditions as may seem to the association advisable.

In view of the expectation of publication in full, a detailed report at this time would appear superfluous. The topics under investigation may be stated, it being understood that the work of the committee covers apparatus, methods of investigation and treatment of results; association tests, motor tests, tests on ideational types, pitch discrimination, intensity of sound determinations; and in animal psychology a determination of the phenomena of color vision.

So far as practicable the committee intends before publishing its findings to have the results of each member tested by at least two other members.

Joint Session with Section L (Education) of the American
Association for the Advancement of Science.

Psychological Investigations that Will Help Education. E. A.
KIRKPATRICK.

It is agreed that the ends of education, whatever they may be, are best reached by proceeding in accordance with psychological principles. This has been recognized in a general way only in arranging courses of study, methods of teaching and class management. As yet,

¹The results referred to are those mentioned by Professor Titchener on page 378, *op. cit.* As in our work, Baird's results with red and green are more irregular than those with blue and yellow.

however, the practical application of the results of experimental psychology have been very few. The results of studies of learning processes should soon be practically applied by teachers, but they cannot be used under ordinary school conditions until complex processes have been more fully analyzed so as to determine the mental and physiological processes involved in them and their functioning studied under ordinary school conditions. Memory is as much a process of judging as it is of reproducing former activities and the key to the most fundamental educational principles is to be found by a study of standards used in understanding and remembering. Such a study, carefully made, should yield definite rules of procedure to be followed in the acquisition of knowledge and skill analogous to those furnished by physics to mechanics or to those given by chemists and biologists to agriculturists.

Studies of Number Consciousness. C. H. JUDD.

Experimental methods of treating number consciousness are much more difficult to develop than methods of dealing with other forms of mental activity of interest to the student of educational psychology. One of the simpler processes involved in the formation of number ideas, namely, that of counting, can be dealt with experimentally as follows: First, a number of individuals were directed to count as rapidly as possible and to record by means of a hand reaction the beginning and end of each series. It was found that, for nine out of fifteen persons examined, counting aloud was either more rapid than silent counting, or equally rapid with it. In some cases the effort to inhibit articulation in counting retarded the process of silent counting so that it was twenty or thirty per cent. slower than the process of counting aloud. Certain other series of articulation can be found which are more rapid than counting, thus in some individuals the articulation of the letters of the alphabet is more rapid than the articulation of the names of numerals. In general the articulation of the names of all the numerals beyond ten is so difficult that for experimental purposes only the series from one to ten can be used.

After determining the maximum rate at which the short series of numerals or similar groups of letters can be articulated, experiments were instituted to determine the rate at which sounds, tactual impressions or successive visual impressions can be counted. The process of counting a series of sensory impressions involves the process of relating the internal series investigated in the first part of the experiment to an external succession. In a number of individuals it was

found that this relating of the inner series to the external series is easily possible when the external series consists of a succession of sounds. It is always more difficult when the external series consists of tactual impressions and extremely difficult when the external series consists of visual impressions. Furthermore, there are some individuals who find the counting of auditory impressions difficult. Taking the most favorable cases, namely, the cases of those individuals who exhibit a good ability for counting a succession of sounds, it was found in a number of cases that the ability to count under such conditions reaches its limit at the same point that the ability to count without reference to external stimuli reaches its limit of rapidity. Only one individual out of five was able to group together successive series of sounds in groups of ten more rapidly than he could articulate the numerals. The counting of sounds seems to be limited therefore in several cases by the ability of the individual to formulate some internal rhythmical series which shall correspond to the external succession. For most persons the internal rhythm is the rhythm of articulation. In these same individuals the other forms of sensory experience offer much greater difficulty and the adjustment between internal and external successions is a more complicated process. In some individuals the relating of internal and external series offers under any conditions difficulties which do not appear in the pure inner series.

The Factors of 'General Ability.' E. L. THORNDIKE.

Taking general intellectual ability to mean a properly weighted average of abilities in those functions by which men control their environment and themselves, we find that the associative and selective processes correlate with it somewhat closely, much more closely than do the more purely sensory and motor abilities. Spearman's claim that the common factor in sensory discriminations is identical with the common factor of all intellectual functions is not upheld by later studies.

The hypothesis is suggested that the physiological basis for differences in general intellectual ability is differences in the number of endings of the axones and their collaterals, and in the variety, extent and excitability of their changes of positions. The attempt is made to show that these quantitative differences in the structure and action-systems of the neurones are adequate to parallel the qualitative differences in general intellect.

Homogeneous Content in the Measurement of Continuous Memory Processes. CARL E. SEASHORE.

The experimenter in education should look to psychology for tested methods and apparatus. The development of technique in psychology may be an object in itself.

The method proposed secures the following conditions for the content in a memory process: (a) Homogeneity, (b) possibility of continuing the process for any length of time with the same content, (c) favorable conditions for fractionating the introspections, and for exact account of imagery and associations, (d) detailed record of each element in the process, (e) adaptation to, and variation for, different memory types, (f) variation in the impression, the retention, the reproduction, and the association, under control, (g) may be adapted for use in the study of memory as it enters into fatigue, adaptation, practice, transference of training, comparison of types, comparison of conditions, attention, etc. The plan is to use only three or four sensory stimuli, and these shall differ in one respect only.

The General Effects of Special Practice in Memory. W. F. DEARBORN.

This paper is concerned chiefly with a critique of recent experimental work with a special reference to the results of Ebert and Meumann. The possibility of improvement through the repetition of the test series themselves may in part account for the unusually large amount of the apparent influence of the special practice. The test series of Ebert and Meumann have been repeated under similar conditions, intervals of time, etc. The results indicate that a considerable part of the improvement found must be attributed to direct practice in the test series, and not to any 'spread' of improvement from the practice series proper. There is further, at times, lack of correlation between the amount of improvement made in the practice and that made in the test series; occasionally a larger percentage of gain is made in the latter than in the practice itself. This again indicates the presence of direct practice in the test series.

Some at least of the remaining general improvement found is to be explained simply in terms of orientation, attention, and changes in the technique of learning.

These results seem to render unnecessary the hypothesis proposed by Ebert and Meumann to account for the large extent of the general influence of special practice, which their experiments seem to indicate.

The Study and Treatment of Retardation. LIGHTNER WITMER.

(This paper will be published in full in an early issue of the PSYCHOLOGICAL REVIEW.)

Joint Session with the Southern Society for Philosophy and Psychology.

Sensations following Nerve Division. SHEPHERD IVORY FRANZ.

Examinations of an individual in whose arm the ulnar and median (probably also the medial antibrachial cutaneous) nerves were cut show that the losses of sensation are similar to those found by Head and Sherren, and that the sensations may be classed as these authors have done into: epicritic, protopathic and deep. Certain differences were found with the help of a Bloch instrument in the touch sensations. These are that although parts of the skin are apparently normal — *i. e.*, retain the epicritic sensibility — these parts show differences in threshold values, the greatest value being close to the line of epicritic loss and there being a gradual decrease in the threshold outward. These results indicate, contrary to the supposition of Head, that there is an overlapping of the nerve supply.

Examinations of the hair and temperature sensibilities gave deviations from the results of Head. In certain places the hairs were found to be sensitive to light touches, but not to plucking. This result may be taken to indicate a physiological explanation of the histological findings of Tello, of two kinds of sensory nerve endings in or near the hair bulbs. Cool, cold, warm, and hot stimuli were sensed in such a way that the general results of Head were confirmed, but it is apparent that there is an overlapping of the temperature nerve supply. The results on hair and temperature sensibility can best be explained by assuming a double nerve supply for both.

Suggestions from Two Cases of Cerebral Surgery without Anæsthetics. GEORGE TRUMBULL LADD.

The paper deals with two cases of cerebral surgery which have recently been performed without the use of anæsthetics. A brief narrative is first given of the one case, of which a printed record is available; certain facts are then given, as learned by correspondence, concerning the other case, whose record has not yet been given to the public. Suggestions follow as to the sensitivity of the brain substance and the dura; as to the nature of cerebral localization; as to the educability of the brain; and, finally, as to a possible independence of the life of self-consciousness, of the integrity of the nervous centers.

Some Aspects of Attention Involved in the Observation of Nearly Simultaneous Retinal Stimuli. DAVID SPENCE HILL.

In this experiment, by means of a wheel tachistoscope, two illuminated discs were exposed to the periphery of both eyes, the right leading, the left leading, or simultaneously. The device permitted divisions of time intervals as fine as .00092 of a second, the equivalent of a millimeter of movement. In four series of experiments with six observers, it was found: (1) That both trained and untrained introspectionists could be led by suggestion to judge intervals erroneously which had been judged correctly a few minutes before. (2) That in tests with and without an interfering signal an individual preference of attention existed, *i. e.*, where the perceptions were doubtful the observer tends uniformly to decide in favor of right or left stimulus in accordance with this preference or predisposition. The influence of motor sensations, of erroneous placing of stimuli unequally upon the retina of local or cerebral abnormalities, are all possible factors correlated with these seeming preferences of attention. It has been suggested that they may have some relation to our reading habits; upon this hypothesis it would be interesting to subject groups of Jews, Chinese, young children, mature English readers and illiterates to comparative tests by means of a simple tachistoscope. (3) That the nature of attention in such experiments, though perhaps predominantly characteristic of the individual, may vary during a single sitting, with objectively uniform conditions. Two ways of attending or phases of attention were noted in our observers: (a) The sensorial, mechanical type, where there is confidence and accuracy, but apparently little conscious conflict of ideational factors, and the record here is, perhaps, nearly that of a perception. (b) The apperceptive or associative type, where the record is usually that of a judgment, *i. e.*, the product of a train of ideational factors, a psychic product of greater complexity than the perception. In this the psychic rather than the retinal or objective elements seem to predominate. In this second group also belong those whose records are influenced more by expectation, suggestibility, than by the retinal or external factors.

The above study is presented only as preliminary to a repetition of the quantitative determination of the least observable interval and presents more problems than conclusions, which await further investigations. To this end the writer has mapped out a program and has constructed a second apparatus, which is perhaps an improvement upon the first.

Notes on the Discernment of Likeness and of Unlikeness. G. V. N. DEARBORN.

In judging the likeness and the unlikeness of flat fantastic figures (ink-blot) in black and white the most conspicuous criterion employed is massiveness. The large majority of the subjects make their judgments on the basis of some concept derived by imaginative association rather than on the actual objects presented for comparison. A minority, on the other hand, attend to the real characteristics of the blots, *feel* the likeness and unlikeness. The latter method yields the more accurate judgments. It is suggested in the research-results how strong is the tendency to symbolism in the human mind. The motivity basis of consciousness (its dependence on neuro-muscular innervations) receives strong illustration in the result that of those who required some conceptual basis for comparison nearly all avowed that the concept became clear in their minds only when the word representing it had been formed by their organisms.

A Contribution to the Theory of Tonal Consonance. R. M. OGDEN.

Tonal consonance is a unique experience, somewhat comparable to the experience of recognition. It may be conceived as the conscious symptom of a relatively simple and economic activity on the part of the auditory nerves. This ease of functioning is primarily due to a characteristic organic disposition which has resulted principally from racial experience of overtones.

Overtones are very frequent, if not the invariable, attendants on all tones. We may, therefore, assume that, in accordance with the mathematically simple relationships which exist between overtones and their fundamental, certain definite functional patterns are stimulated. These functional patterns, because of the great frequency of their stimulation, are naturally acquired by the organism as dispositional tendencies. In the history of the race these tendencies gradually manifest themselves by conditioning tonal consonance among those relationships of tones which are conspicuous features of a normal series of overtones. Thus developed, this dispositional tendency operates, not merely to determine the degree of consonance of simultaneously perceived tones, but also to demand consonant supplementation among successively perceived tones.

Tonal consonance is a unique sort of experience, but its uniqueness is referable neither to feeling nor to æsthetic quality. On the contrary, consonance may be experienced as (1) pleasant, unpleasant or affectionally neutral; (2) æsthetic or unæsthetic; (3) any combination of

(1) with (2). In order to acquire affective character, the experience must be either enriched or depleted through some contributory factor. In order to acquire æsthetic character, the experience must occupy the focus of attention, and find itself dominant amidst a total conscious state in which no motives for re-adjustment are conspicuous.

On the Psychological Origin of Religion. JAMES H. LEUBA.

In the first part—the origin of the ideas of ghosts, nature-beings and creators—the ideas of unseen personal beings are traced to four independent sources. (1) States of temporary loss of consciousness, trances, swoons, sleep. (2) Apparitions in sleep, in the hallucinations of fever, of insanity, or otherwise.

Sources one and two constitute the double origin of the belief in *ghosts* or *doubles*. (3) The personification of striking natural phenomena, tornadoes, thunder, sudden spring-vegetation, gives rise to the belief in nature-beings. (4) The necessity of a creator is borne in upon the savage at a very early time, not upon every member of a tribe but upon some peculiarly gifted individuals.

The question to be settled by the student of the origin of religion is concerning the lineage of the first gods. Are they descended from ghosts, or are they nature-beings, or creators? The idea of a creator is the one more likely to lead to the establishment of relations definite and influential enough to deserve the name religion. But the descentance of gods need not have been the same in every instance.

In the second part—the original emotion of primitive religious life—a discussion of contending theories leads to the suggestion that the phrases *negative religion* should be used to designate man's dealings with radically bad spirits and *positive religion* his relations with fundamentally benevolent ones.

Clearness, Intensity, and Attention. HENRY RUTGERS MARSHALL.

The distinction between intensity and clearness (vividness) is one between intensities of different types. Diversities of intensity are most often noted in the sensational realm: when therefore we consider intensity as such, we usually think of sensational intensity. When intensity is non-sensational, and is distinguished from sensational intensity, we naturally apply the word intensity to sensational intensity, and invent a new term, viz., clearness (or vividness), to designate non-sensational intensity. The difference between intensity and clearness is a difference of 'setting.' Attention-experience always involves an emphasis of an intensity, although attention cannot be identified with such emphasis alone.

An Interpretation of the Psycho-analytic Method in Psychotherapy.

W. D. SCOTT.

According to certain neurologists and psychiatrists hysteria, psychasthenia, obsession and phobia are all caused by suppressed emotional ideas — mainly sexual. These ideas are pressed down into the realm of the subconscious and remain there coexistent with the normal consciousness. They manifest themselves in dreams, hallucinations, automatisms, etc. The cure of the patient is dependent upon raising these ideas up into full consciousness and thus allowing them to live themselves out. The psychoanalytic method is employed to secure this result. The method may be employed in connection with hypnosis, relaxation or free association of ideas. The successful application of the method based upon such a theory is assumed to give great weight to the theory of subconscious ideas in the extreme mythological form.

Even though the method is very successful it does not necessarily follow that the explanation of the result is correct. From my own clinical notes I shall try to show that the method makes the most skillful use of suggestion and that it does not offer any special support to a belief in a realm of subconscious ideas.

The Field of Applied Psychology. HUGO MÜNSTERBERG.

The Harvard Psychological Laboratory has started the development of a department for applied psychology with a special assistant for the field. It is to be relatively independent, like the older department of animal psychology. The aim is to build up an experimental science which is related to the traditional laboratory psychology as engineering is related to theoretical physics. So far such studies have been carried out essentially by physicians and by educators. But as soon as a special workshop for applied psychology exists, these psychomedical and psychopedagogical researches will make up only a fraction of the work. Equal importance belongs to the psycholegal researches, dealing with the psychology of the witnesses, of the defendants and so on; to the psychoæsthetic studies, dealing with advice in psychoæsthetic problems from the work of the artist down to that of the cook and dressmaker; to the psychoscientific studies, dealing with the mental factors in scholarly work in observation, experiments and so on; to the psychotechnical studies, dealing with the psychological conditions in our technical civilization in business and commerce and industry, analyzing the conditions of the various occupations with reference to the work of the laborer, to his safety and his

effectiveness and so on; to the psychodiagnosical studies, dealing with the individual differences of man and the means to recognize and to determine his fitness for special lines of work, for special professions and practical vocations; to the psychosocial studies, applying experimental psychology in the interest of social reform and politics and public movements, prevention of crime and social regulation; to the psychoreligious studies, making psychology helpful to the problems of the church and so on. As soon as the movement is more fully recognized in the scientific independence of its problems, which are much more than mere byproducts of theoretical psychology, it will surely bring about the creation of laboratories for applied psychology in every seat of learning; and they may soon show the same ramifications which the technological institutes show to-day.

The Observer as Reporter — A Survey of the Psychologie der Aussage. GUY MONTROSE WHIPPLE.

This paper outlines the conditions that have led to the study of the psychology of testimony, enumerates the problems that have arisen, discusses the methods that have been developed, seeks to summarize and appraise the chief results and to stimulate the interest of American investigators in this field.

The *Aussage* or report is an account of an earlier mental experience. The primary problem of the *Aussage-psychologie* is the determination of the factors which condition the fulness and accuracy of this account. Its practical application consists in the establishment of rules for the evaluation of reports (testimony) made under given conditions, and the promulgation of methods of training in fidelity of observation and report.

Methods. — The chief methods of investigation are the historical and the experimental. Important problems of procedure in the latter method are the choice of (1) the test-material, (2) the exposure-time, (3) the time-interval between experience and report, (4) the form of report (whether narrative or deposition), (5) the type of interrogatory to be used in the deposition, (6) the quantitative treatment of data and the determination of the several coefficients of report, with particular reference to the problem of grading.

Results. — The chief results in this field to date are: (1) errorless reports are the exception; (2) the average accuracy of report is approximately 75 per cent.; (3) there is no general relation of range to accuracy; (4) there is no general relation between range of report and other constants which depend upon degree of assurance; (5)

attested or sworn statements are not free from error; (6) men appear to surpass women in accuracy, though not in range of report; (7) the reports of defectives are entirely unreliable; (8) the reports of children are in every way inferior to those of adults, and are characterized by exaggerated and unwarranted assurance and a high degree of suggestibility; (9) the relation of report to general intelligence is not satisfactorily determined; (10) a lengthened time-interval is in the main unfavorable, but there are interesting exceptions that indicate the presence of complex influences; (11) not all features are reported with equal fulness or accuracy (colors and numbers being particularly poor); (12) the general principles that govern estimation of duration and magnitude have been approximately determined; (13) the report is conditioned by the ideational type of the observer; (14) the deposition exhibits greater range and less accuracy than the narrative; (15) the use of leading or suggestive questions reduces accuracy markedly, particularly in children; (16) repetition exercises a complex influence; (17) practise, even without specific training, produces improvement; (18) the capacity to report is educable by at least three different methods.

Conclusion. — The *Psychologie der Aussage* has opened a field of interest and importance, to which American investigators have as yet paid almost no attention.

(This paper will appear in full in an early issue of the *PSYCHOLOGICAL REVIEW*.)

The Abandonment of Sensationalism in Psychology. M. W. CALKINS.

Present-day psychology diverges in several ways from sensationalism. (1) In 1893 Wundt still taught that sensations are the only elements of consciousness. To-day almost all psychologists agree in recognizing also the affective elements, pleasantness and unpleasantness. Wundt, indeed, now adds to these four others: 'tension-relaxation' and 'excitement-depression.' And though he fails in the attempt to show that these are affective elements, that is, that they are of the same class as *Lust* and *Unlust*, he does succeed in supplementing the traditional list of elements of consciousness. 'Tension' turns out to be virtually identical with attention, or 'clearness'; and Titchener has not established his contention that 'clearness' is purely sensational. The other three 'dimensions of affection' are neither elemental nor affective; they are analyzable into (a) organic sensations and (b) relational elements, that is, elements neither sensational nor effective.

(2) There is no sufficient argument to refute the introspective tes-

timony of writers so diverse as Spencer, James, Stout, the Austrian school of Meinong, Külpe, Bühler, and other members of the Würzburg Institut, Cornelius, Ebbinghaus, Stumpf, Münsterberg, Woodworth, and other American psychologists, who agree that consciousness — and in particular thought — includes these elements, or attributes, which are neither sensational nor affective. The experimental studies of this relational consciousness are especially worthy of attention. The teaching about relational elements of consciousness is, however, open to two criticisms: In the first place the upholders of the doctrine have lacked a certain *esprit de corps*; and, second, they have been prone to claim more than is necessary. For even if there were no imageless thought, it would yet remain true that thought is not all imagery.

(This paper will be published in full in an early issue of the PSYCHOLOGICAL REVIEW.)

A Course of Study in Experimental Pedagogy. GEO. CUTLER FRACKER.

The speaker outlined a course in Experimental Pedagogy which had been successfully offered during a semester of last year. There were experiments on Sense Training, Sense Defects, Nerve Conditions, Motor Defects, Influence of Training, Association, Memory, Memory Training, Fatigue and its Effects, Attention, Rhythm and Imagery. The course seemed a profitable one to a class of ten students who expected to engage in teaching. Expressions regarding the value of the course had been secured from those who are now teaching, which testified to the practical value of the course from the standpoint of the teacher.

The general nature of the course partook of experiments in Psychology, in work in medical inspection, in child-study work, and in experiments which were strictly pedagogical. In offering the course for the coming year the author expects to eliminate much of the purely psychological and enlarge upon the more strictly pedagogical phases.

The Place of Analysis in the Curve of Efficiency (Preliminary Report). H. A. RUGER.

Practice curves were taken with thirty mechanical puzzles. Profiting by experience in the case of successful variations dependent on the analysis of those variations and the use of the results of this analysis as an hypothesis to control manipulation rather than on repetition of chance successes with emotional reaction but without analysis. Im-

portance of analysis and hypothesis for transfer within the puzzle series and between it and other forms of experience. Formation of larger units of manipulation dependent on similar analysis and hypothesis covering whole range of movements rather than on process of gradual summation. Possibility of favoring variations.

Illusions in Muscle Localization through Visual Suggestion. D. C. ROGERS.

Through the use of prismatic lenses the hands and other parts of the body are seen in other directions than their true ones. Within wide limits they are felt where they are seen. The illusion is so strong that finger-tips many inches apart may be supposed by the subject to be close together or *vice versa*. Through similar means the hands and feet are felt in unnatural shapes, and vivid feelings of movement are experienced in the hands while they are actually at rest. By testing the localization of an unseen hand or of a sound while one hand is watched through the prisms, or by making such tests after one arm has been trained to movements adjusted to prismatic directions, the organized inter-relations of space perceptions can be studied.

On the Difference between the Method of Expression and the Method of Impression. F. M. URBAN.

The Attitude as a Psychological Concept. IRVING KING.

Psychology has been concerned largely with the analysis and description of so-called mental elements. These are recognizedly *fictions* of science. This paper urges that there is an absolute necessity of supplementing the analytic method by a synthetic treatment of consciousness. The fictions of analytic psychology, taken out of their natural contexts and treated as if isolable quantities, give rise to all sorts of difficulties and contradictions, *e. g.*, those between feeling and emotion on the one hand, and attention and intellectual processes on the other. As a matter of fact, in actual life, the so-called 'elements' are always fused in more or less complex systems, organizations with reference to the various situations of life. These systems may be called 'attitudes.' They are coördinations of processes, biological and psychical, which stand for some phase of the interaction of organism with environment. We use the term 'attitude' as more inclusive than mental content, regarding the latter as an abstraction, having no adequate meaning except within the system of relations holding within the 'attitude.'

The work of the analytic psychologist is not disparaged but is

urged to be incomplete if not supplemented by more recognition of the synthesized aspects of consciousness. It is possible to work out a psychology of 'attitudes' which will be most serviceable in certain directions, *e. g.*, in the sphere of education. The teacher is not concerned with *mere* percepts, ideas, feelings, with the bare laws of association, or even with imparting any information as such, but with the conditions under which these complex, dynamic systems are built up and the method of their interaction. It is impossible in a brief abstract to indicate all the important bearings of a more definite recognition of these systems which may be called attitudes or functional organizations within the self.

PROCEEDINGS OF THE FOURTH ANNUAL MEETING OF
THE SOUTHERN SOCIETY FOR PHILOSOPHY
AND PSYCHOLOGY, BALTIMORE, MD.,
DECEMBER 30 AND 31, 1908.

REPORT OF THE SECRETARY.

The fourth annual meeting of the Southern Society for Philosophy and Psychology was held at the Johns Hopkins University, Baltimore, Md., on Wednesday and Thursday, December 30 and 31, 1908, in affiliation with the American Association for the Advancement of Science, the American Psychological Association and the American Philosophical Association. The program as announced was carried out with one minor exception. One third of the members were in attendance, making this the best attended meeting in the history of the society.

Two sessions were held. On Wednesday afternoon, December 30, the society met in joint session with the American Psychological Association in Levering Hall, one half of the six papers presented being read by representatives of the society. The abstracts of these papers appear in the report of the secretary of the American Psychological Association. This session concluded with the address of the president of the American Psychological Association, Professor George M. Stratton, on 'The Betterment of Rival Types of Explication.'

On Wednesday evening, December 30, the society met with the American Philosophical Association in the Assembly Hall of the Baltimore City College for the address of its president, Professor Hugo Münsterberg, on 'The Problem of Beauty.' This was followed by a joint smoker with the American Philosophical Association and the American Psychological Association at the Johns Hopkins club.

The second session was held on Thursday afternoon, December 31, in Room 12, McCoy Hall, at which the papers mentioned below were read. The address of the president on 'The Proper Affiliation of Psychology' (an abstract for discussion), was delivered at 4:30 o'clock, the American Philosophical and Psychological Associations adjourning to meet with the society for this occasion.

At the business meeting which followed the address of the president, the officers for 1909 were elected as follows: *President*, Pro-

fessor Albert Lefevre, of the University of Virginia; *Vice-President*, Professor Shepherd Ivory Franz, of the George Washington University; *Secretary-Treasurer*, Professor Edward Franklin Buchner, of the Johns Hopkins University. Elections to vacancies on the *Council* constituted the elective membership of that body as follows: to serve one year, Dr. William T. Harris, Washington, D.C., and President D. B. Purinton, West Virginia University; to serve two years, Professor J. Mark Baldwin, Johns Hopkins University, and Mr. Reuben Post Halleck, Boys' High School, Louisville, Ky.; to serve three years, Professor J. Franklin Messenger, Virginia State Normal School, and Professor Robert Morris Ogden, University of Tennessee.

Upon receiving a report from the business management of the *PSYCHOLOGICAL REVIEW* that the annual subscription to the journal would be increased to \$4.50 owing to the proposed enlargement of the *PSYCHOLOGICAL BULLETIN*, it was voted that the annual dues of the subscribing members of the society be increased to \$3.50. This increase in dues enables the society to continue the excellent business arrangement with this journal which was entered into at the first annual meeting in 1904. By resolution the society expressed its thanks to the Johns Hopkins University and its Department of Philosophy and Psychology for the excellent provisions made for the comfort of its members during the meeting.

The report of the Treasurer, presented to and approved by the Council, showed a balance on hand of \$63.73.

On nomination by the council, the following were elected to membership in the society: Professor J. C. Barnes, Marysville College; Professor Frank T. Day, Randolph-Macon College; Professor Charles A. Dubray, Marist College; Professor Fletcher B. Dresslar, University of Alabama; Dr. Knight Dunlap, Johns Hopkins University; Professor Philip Johnson, Bethany College; Professor C. N. McAllister, Missouri State Normal School; Professor G. B. Moore, University of South Carolina; Professor Josiah Morse, Peabody Normal College; Professor Bruce R. Payne, University of Virginia; Professor George M. Sauvage, Catholic University of America; Dr. Karl Schmidt, University of Florida; Professor Edmund T. Shanahan, Catholic University of America; Dr. William T. Shepherd, George Washington University; Professor John Broadus Watson, Johns Hopkins University; Dr. Clarence S. Yoakum, University of Texas.

ABSTRACTS OF PAPERS.

A Point of View in Comparative Psychology. JOHN BROADUS WATSON.

This paper raises the general question of what the mental attitude of the animal psychologist ought to be when he observes the behavior of his animal subjects. The investigator in this field of psychology scientifically examines and records the adjustments which it is possible for his animal to make. When all of his data are at hand, is it necessary for him to set up a criterion of consciousness and attempt to apply it specifically in order to give scientific justification and value to the facts just observed in the experimental room? This question was raised in connection with a discussion of the various criteria of the psychic proposed by Loeb, Morgan, Lukas and Yerkes. The opinion was expressed that these criteria are impossible of application and that they have been valueless to the science, both from the standpoint of theory as well as from that of obtaining facts.

The position was taken that 'facts of behavior' are not grounded in criteria of the psychic and that they are not embarrassed by the total absence of any criterion of the psychic in the mind of the investigator who obtains them. The record of the rise of a red-green discrimination habit in a monkey, obtained under suitable conditions of control, is as objective a fact as is the record of a color-blind test made upon a human being under similar conditions of control, or as the statement of the test for the presence of radium in some inorganic compound. All three 'facts' are obtained under conditions which are scientifically exact, which can easily be repeated and verified by some other observer. The facts obtained from tests on the red-green vision of the monkey are immediately taken up and woven into the increasingly complex fabric which we indifferently call animal psychology or animal behavior. The facts obtained from similar tests upon the color-blind human being become a part of the structure we call human experimental psychology; while the facts obtained from the test for radium are likewise taken up into that vast body of knowledge we call chemistry.

Facts of behavior are admittedly not obtained by introspection, but are obtained by observing reactions under conditions of control. But this admission does not rob them of their place in science as a whole nor even of their place in the specific science of psychology. Much of the data obtained in the human experimental laboratory are not obtained by the use of introspection, as for example, our large and

valuable data on eye movement, the formation of habits involving muscular skill, etc. Such data, however, have become an integral part of experimental psychology. It would appear that even human experimental psychology is putting more and more emphasis upon methods of observing and of recording reactions rather than upon the methods involving primarily introspection and the use of the speech reaction, as means for obtaining its scientific facts. As our scientific technique in controlling the conditions under which a given reaction may be made and recorded comes more nearly to resemble the perfection of technique of the physical sciences, there will be less and less inclination to base any investigation upon a record obtained solely from the use of introspection (questionnaires, etc.).

In the light of these tendencies, we may safely say that the same point of view which the human psychologist is coming more and more to carry with him in observing his human subjects will serve him equally well in making tests upon defective individuals, children and animals. The question of a criterion of the psychic will distress him no more when he tests color vision in monkeys than when he tests the color vision of his partially color-blind laboratory boy. Criteria of the psychic will disappear from the field as soon as we are willing to include in the study of psychology the whole of the 'process of adjustment' and to consider that process ontogenetically and phylogenetically in all of its broad biological aspects rather than to confine our attention merely to that phase of it which pertains to the presence or absence of certain mental elements which we can introspectively verify when the adjustment happens to concern our own organism.

The Extensity Theory of Pitch. KNIGHT DUNLAP.

The Nodal-Figure hypotheses and the 'Telephone' hypotheses of tone perception are excluded by the known anatomical and pathological facts, and the psycho-physical analogies. The Selective Vibration (Local-Sign) hypotheses are not yet excluded, although anatomical investigations have discredited the Helmholtz-Hensen explanation. The Extensity hypothesis is given additional probability by the discovery of the structure and probable function of the tectorial membrane. Phenomena which are more satisfactorily explained by the Extensity theory than by a Local-Sign theory are: (1) Obliteration of high notes by low notes, the reverse not occurring. (2) Either inaccuracy or accuracy of interval estimation, with or without absolute pitch; and temporary absolute pitch. (3) Influence of practise on the perception of partial tones. (4) Pathological cases in which

a number of distinct (non-fusing) 'subjective' tones occur simultaneously, several being apparently of the same pitch, at the upper threshold. (5) The greater loudness of high tones of same energy as lower tones. (6) Pitch contrast: the easily demonstrated influence of a note on the estimation of the pitch of a succeeding note of different pitch.

The Trend of the Clinician's Concept of Hysteria. TOM A. WILLIAMS.

Cases of hysteria in the Salpêtrière of to-day prove the artificiality of the four phases of hysterical attack described by Charcot. Moreover, such stigmata as anæsthesia, contraction of visual field, muscular contracture, Lesègue's syndrome, and catalepsy as well as amnesia are no longer found when Babinaki's technique is employed in examining hysterical patients. Suggestibility is the only sign of hysteria; and indeed a hysterical symptom is merely one 'producible by suggestion and removable by suggestion-persuasion.'

What, then, of the œdemas, sweating, fever, ulcers, hæmorrhages, occurring in hystericals? They emanate from other causes, less clearly ascertainable in the early days of medical science, but now better known. Most of those not due to disease are often discovered to be produced by a patient of mythomantic tendency such as that of the girl who pretended to die and afterwards confessed she was never so much amused as when watching the tears of her friends and their efforts to rouse her. Malingering is a form of mythomania often suggested by types of disease seen in hospitals. In so far as suggested it is hysteria: but not otherwise. The traumatic neurosis is a form of hysteria being induced by environmental expectation and sympathy and fostered by ignorance, venality, having sometimes, however, a strong tinge of self-pitying mythomantic poltroonery. Illustrative cases teem in medico-legal literature.

The more detective skill and rigorous method is used, more and more of such cases disappear from the class hysteria.

Likewise, the modification of the reflexes, tendon, cutaneous, vaso-motor and dilator, are not suggestible phenomena but are always due to perturbation of the nervous system otherwise engendered, as by emotion and organic disease.

However, suggestibility is favored by certain organic states, the toxi-infectious ones particularly, and these may be accompanied by other phenomena, as in uræmia, where a temporary organic palsy may be due to œdema and may accompany a hysterical state.

However, emotionalism is not hysteria, except when it is suggested, although many patients when under the influence of strong emotion may lose control and thus be more suggestible. The contrary, however, is as often true, and a powerful emotion will produce an insusceptibility to external expressions.

Although neurasthenia and psychasthenia are not produced or influenced by suggestion, yet the subjective symptoms of the neurasthenic state may be acquired by suggestion, as the author has shown elsewhere. The suggestions of organic disease are very powerful and may lead to a complete disability not justifiable by the organic state, as in tabes. But the suggestions of the medical attendant are the most powerful of all and many a hysteria is thus perpetuated.

The hallucinations of hystericals are not veridical but idiogenetic, as Sidis has shown. Although physiological data are lacking for the explanation of hysteria, it appears clear that the state is favored by biochemical modifications which delay or inhibit the more complex neural processes of association, and psychologically speaking there then occurs an arrest of mental synthesis which explains the individual's increased suggestibility.

But hysteria is neither lack of mental synthesis nor cerebral intoxication; for either of these conditions occurs without increased suggestibility. Thus for a definition of a hysterical symptom we cannot but accept that of Babinski: 'The property of being producible by suggestion and removable by suggestion-persuasion.'

The Will and Belief. EDWARD E. RICHARDSON.

This paper is a consideration of the occasion and essential nature of those higher syntheses of experience which are made in response to a desire to constructively order the totality of experience or the impulse to obtain a rational world. It is from this invincible impulse to somehow rationalize his world of experience that man has been led to philosophy and science. Reference is made to the well-known views of Professor James and others concerning this rationalizing of the world of experience. Attention is next directed towards the occasion of the limitations of a purely intellectual endeavor to accomplish this result and to the conscious desire that the boundaries of experience shall in some way be brought within a synthesis or given a rational meaning. This is with particular reference to Professor James's contention that volitional activity is of paramount importance here, or is a necessary means to accomplish the desired result. After a mention of the uses that are made of speculative scientific hypotheses, religious

beliefs, etc., the question is raised as to whether these are to be regarded as having their ground in the volitional, emotional or rational side of our three-fold mental activity. Following the consideration of the occasion and ground of this impulse, attention is next directed to the character or nature of this impulse or want as regards the rationality of our experience and the relation which this has to faith and belief, as well as the significance of these two as regards their mutual relation. The psychological bearing of will and belief are also briefly touched upon.

The main conclusion that is reached by the paper is that the ground of the means made use of to accomplish the desired end, to satisfy the want, lies in the rational nature — attention being called to the distinction between the theoretical and rational. The further deduction is drawn that if the occasion and ground of this impulse or desire is to be found in the rational phase of mental activity, and if the various means or steps that are taken, satisfy that which calls them forth, then these same means must partake somewhat of the nature of that which makes use of them. In other words, they must be rationalistic in their inmost character when all considerations are properly weighed. The construction or unification of experience follows certain definite lines which are not left to the free choice of particular experiencing individuals. The experiential world as finally synthetized is the same for all who experience and is not irrational in its ground or nature.

Sketch of a Proposed History of Æsthetics. WILLIAM DAVIS FURRY.

Sully long ago pointed out that the most important fact about æsthetics is its unfruitfulness, a conclusion which Groos also reaches and attributes it to the holding of a wrong method in æsthetic investigation as well as also the limiting of the investigation to an insufficient material. For a long time the æsthetic object was regarded as one with the perceptual object. Æsthetic investigation then confined itself to an analysis of the object thus given. Later investigation finds it necessary to distinguish between the æsthetic and the perceptual object. The two can no longer be identified. The problem is generally stated as that of 'form' and 'content.' This content is thought of in two ways: by Bosanquet the content of the æsthetic object is thought of under an abstract intellectual form as the objective Idea revealing itself to reason through sensuous appearance. Beauty is thus the Absolute realizing itself in the relative. Æsthetic theory is therefore to be regarded as a branch of philosophy and 'exists for the sake of knowledge and not

as a guide to practice.' Thus the æsthetic is reduced to the theoretical, and the history of the æsthetic is not the history of the rise and development of the æsthetic as a *sui generis* type of experience but is pursued wholly in the interests of the unfolding of the Idea as a meta-physical postulate.

The investigations of Lipps and others have given the *coup de grâce* to the abstract formalism of the extreme Idealists by showing that the formal elements of beauty such as lines, tones and colors have vital as well as formal meaning for the imagination. Art is nature made human (Raymond). The landscape painting of to-day reveals to us how the more subtle modes of nature participate in human experience while even the more inert forms of architecture are enjoyed as sharing in our experience. According to Lipps, who has done most in resolving beauty into content for the imagination, the essential process in æsthetic enjoyment is 'Einfühlung.' It is a new creation, an illusion, what the Germans call a 'Schein,' indulged and enjoyed for its own sake.

The limitation of the theory of 'Einfühlung' as held by Lipps is that it too lacks the genetic motive and method. He makes art the embodiment of the self without indicating the successive stages through which the self passes. Moreover, Lipps identifies the self with the sense of practical worth, thus reducing the æsthetic to the practical.

The proposed work, of which this is a notice, represents an attempt to show that the two great methods of studying the æsthetic experience, both methods being genetic, yield certain parallel results. The two methods are the 'Psycho-genetic,' the study of the rise and development of the æsthetic in the individual, and the 'Anthropo-genetic,' the study of the rise and development of the æsthetic experience in the race.¹ Both in the race and the individual, the æsthetic is to be regarded as developing from a primitive, undifferentiated experience in which the æsthetic is not distinguished from the great body of affective conative dispositions, to an experience in which the æsthetic is regarded and utilized as a distinct type of experience.

In the proposed work the æsthetic is regarded as a type of experience *sui generis*. From the outset consciousness reveals the presence and operation of a type of interest that cannot be identified with any other. The history of æsthetics becomes the problem of tracing the rise and development of this interest. Volkelt has indicated four

¹ Following Baldwin (*Trans. Third Int. Cong. Hist. of Religions*, Oxford, 1908, I., 389) who uses the term 'Bio-genetic' also for racial history biologically considered.

norms of the æsthetic experience: (1) the most primitive, in which there is a more or less perfect union of form and content; (2) the 'humanly significant'; (3) the 'lowering of reality,' that is, an experience in which form and content have fallen apart; (4) the æsthetic object as an organic unity. The writer prefers the term mode to that of norm and distinguishes three modes in the development of the æsthetic experience alike in the individual and the race. In the case of the individual these three modes have in current discussion been reconstructed with much fullness. Recent work in anthropology, archaeology and what the Germans call 'Völkerpsychologie' makes possible such reconstruction in the case of the race. These modes are: (1) the pre-æsthetic, meaning an experience in which the perceptual and the constructive processes are unified in terms of pure feeling. The characteristic products of this type of æsthetic experience are the spontaneous myth and the fairy tale; (2) the quasi-æsthetic or the play-consciousness in which illusion abounds but in which there is the least attempt at idealization; (3) the æsthetic or period of conscious art-construction. These three types of æsthetic experience reflect three modes of æsthetic theory: (1) the pre-æsthetic in which the æsthetic and the theory of the æsthetic are not distinguished; (2) the quasi-æsthetic in which while the æsthetic is distinguished it is referred to another type of experience for evaluation and explanation; (3) the æsthetic or that type of theory in which the æsthetic is recognized as a distinct type of experience with its own problems, processes and methods, and as having a distinct place and function within the whole of experience.

The Desire for Continued Experience. J. F. MESSENGER.

The paper was suggested by a line in Browning's 'The Last Ride Together' quoted by Professor Royce in his 'The World and the Individual.' In this the lover expresses the wish that his present moment of supreme delight might last forever; he wants 'the instant made eternity.' The intensity of the desire to continue the experience forever is due to his knowledge that it actually will be short. The fleeting character of experience is one of the elements that give it value to the subject who has it. Experience, being a time process, is subject to the limitations of time, and, that being the case, all arguments for an absolutely endless experience are futile and based upon an instinctive tendency to avoid destruction and to somewhat prolong agreeable conscious processes. In discussions about immortality the important thing is to keep in mind the distinction between endless experience

and eternal existence. Experience is psychical phenomena (the word is used in the strict sense) and existence is a metaphysical problem. If the philosopher can find sufficient reason for eternal existence his faith may lead him to believe that that which ought to be *is*. But arguments for endless experience, though often interesting and clever, are of no more value, so far as arriving at truth is concerned, than were the old arguments about how many angels could dance on the point of a needle. The problem should be one of eternal values rather than one of logical proof.

The Proper Affiliation of Psychology; President's Address. J. MACBRIDE STERRETT.

In the Library of Congress one finds the works on Empirical Psychology classified under the division of Physiology. Kant, in the second edition of his *Critique*, says that empirical psychology 'must be placed by the side of empirical physics or physics proper.' Hitherto it has been classed with the philosophical disciplines. Has there been any change in both the methods and the subject-matter to justify its breaking away from its traditional affiliation with philosophy?

Note is made of the discussion of the topic at the meeting of the American Philosophical Association at Harvard in 1907, — also of the fact that the American Psychological Association last year chose to meet in affiliation with the American Society of Naturalists in Chicago rather than with the American Philosophical Association at Cornell, — and of the fact that the A. A. A. S. puts in the program, Section H, Anthropology and Psychology. By common consent, rational psychology and the modern forms of the old introspective psychology go with philosophy. But how shall the new psychology be classified?

Submitting with a protest to the modern sectarian definition of science we can classify all forms of psychology as (1) the old, unscientific psyche-psychology; (2) the new scientific hypo-psyche-psychology.

Examination is made of structural, functional and genetic psychology as forms of the new science. It is found that their nature, aims, methods, and largely their subject-matter, are quite akin to those of the natural sciences.

It is found that consciousness as an entity or activity, and as the subject-matter of the science, is discarded.

It is held that all forms of non-psyche-psychology should be affiliated with the natural sciences. Kant is quoted on the subject from both the first and second editions of his *Critique*. Again, the new

science is distinguished from the other philosophical disciplines in being a causal rather than a normative science.

A plea is entered for the old introspective psychology as the logical form of any psychology — a plea for its work, life and title. If the old psychology be termed *metaphysics* the new science may well be termed Hypo-psychics.

(This address will be published in full in the *PSYCHOLOGICAL REVIEW*, Vol. XVI., No. 2, March, 1909.)

Discussion: The Proper Affiliation of Psychology: With Philosophy or the Natural Sciences.

JAMES GIBSON HUME. — Philosophy and psychology are affiliated in the Southern Society, and in the University of Toronto we do not divorce them.

Certain ultra-scientific psychologists, identifying philosophy with obsolete medieval metaphysics, naturally do not wish any affiliation. They can provide for philosophy under the sub-division 'Psychology of illusions and aberrations.' 'Psychology without a soul' means psychology without metaphysics. We may get along without medieval quibblings about occult essences. Pre-Kantian philosophy repudiated and refuted this dogmatic analytic method, Kant and his successors developed a better method and a more adequate metaphysic. It is as legitimate to distinguish modern philosophy from medievalism as it is to distinguish chemistry from alchemy, astronomy from astrology.

If the soul in question is the one David Hume could not 'catch,' the 'simple substance' demolished in Kant's 'Paralogisms,' we can get along without it also. But Kant reinstated another self or ego in his 'unity of apperception' and 'practical reason,' an organizing function within experience. This we cannot afford to lose. If we have a self within experience we do not need a second one beyond it. Those who are most vigorous in repudiating metaphysics usually reject idealistic metaphysics and adopt materialistic metaphysics instead. A mechanical explanation allows for no distinction between good and evil; it also takes away the distinction between true and false, fact and fancy; as each so-called fancy is as necessarily determined, it is therefore as legitimate as any so-called fact. This destroys science. Hence, materialistic metaphysics ought to be as obsolete as medievalism.

A state of consciousness may be dealt with abstractly, scientifically, and atomically, nevertheless in actuality it is an integral part of a continuum of living, synthesizing, conscious process.

Philosophy and psychology are really complementary. They deal with the warp and woof of the same undivided concrete human experience. Psychology turns special attention to the content and its analysis, philosophy to the organization or synthesis of this same content. Hence, psychology without philosophy is blind, philosophy without psychology is empty.

Experimental psychology has a perfect right to be ranked with the exact sciences; it shares with mathematics the work of making other sciences more exact, nevertheless it is closely bound up with philosophy. Both start from the same data of directly given actual human experience and on this common ground overlap. Further, the philosopher must cultivate the psychological soil if he would gather philosophical fruit; and the psychologist, after getting his scientific results, if he would interpret their meaning must philosophize.

GEORGE TRUMBULL LADD. — It seems to me that psychology may properly become affiliated, or come into brotherly relations, with every form of science where there is a promise of mutual helpfulness. If we look upward to philosophy, we see that psychology has very special relations with it. These relations I have tried to express by calling psychology the proper 'propædæutic' to philosophy. By this I mean that the endeavor to solve the more difficult and deeper problems connected with a theory of the nature and development of the mental life, leads us straight to all the main problems of philosophy, as the supreme form of reflective thinking. Besides, there is no other practical introduction, or discipline preparatory to philosophy, which equals the study of psychology.

If now we look downward and outward we see how psychology may properly become affiliated with all the physical and natural sciences. With the strictly chemico-physical sciences, its affiliations are more remote and indirect, and are chiefly through psycho-physics, physiology, and the so-called anthropological and sociological sciences, of which psychology itself is, perhaps, the most important part. These all contribute to our knowledge of the conditions under which, the environment in the midst of which, and the efficient secondary causes in response to which, the life of the mind begins and develops. For example, psycho-physics may claim the whole territory in which lies the complex science of how the different qualities and intensities of nature's forces arouse, control, and determine the character of the history of the evolution of mind.

But when we have said all this by way of cheerful concession, and even grateful acknowledgment, to these sciences for their help, we

have by no means the right to surrender an independent sphere and special, high importance to psychology, as properly understood. For a true psychology never is, and never can be, anything less than that science which deals with the description, and explanation, and theoretical construction, 'of the facts of consciousness, *as such*'—that is, as facts of consciousness. It is in *these* facts that psychology finds its data. It is *these* facts which the science aims to explain and interpret in terms of a defensible theory of the mind's true nature and actual life of development. If now we examine the claims of physiology, or biology, to absorb and dominate psychology, rather than affiliate with it properly, we find that these sciences are in certain parts—as, notably, the so-called physiology of the sense-organs, and of the central nervous system,—largely themselves borrowers from psychology.

In this connection I wish to protest against the current use of such words as 'the subconscious,' or 'the unconscious,' and the accompanying attempt to discredit the value and uses of self-consciousness and introspection in psychology. The truth is that these phrases stand for a *purely* negative conception, a negation of all attempt to think or to know. Such words as 'infinite' and 'absolute,' when properly used, are never 'purely' negative conceptions. An infinite line, *quoad* line, is as much a line as is one a foot or a yard long. And I am simply amazed at the speaker or writer who imagines himself to be exploiting science when he is telling, in terms of consciousness, how the world would seem to a conscious seer of its processes, when as yet no sight, no seer, no consciousness were existent. Surely, here is the place for an invincible agnosticism.

It is doubtless somewhat disturbing to see how, at the present time, psychology as properly understood and properly affiliated, is being in certain quarters discredited and derided as being quite too 'old-fashioned' to claim the attention of the well-equipped, modern scientific man. But we old-fashioned fellows must continue in our effort to affiliate with all these helpful sciences, while not relaxing our grasp upon our own proper science; and bear with patience and good nature all our rebuffs. Those who are somewhat excited and even mentally awry over the triumphs of the so-called 'new psychology' will recover in time. And, indeed, there is after all only the same old human mind, which may be studied, however, with the help of many new affiliations.

(The abstracts of papers read at the joint session with the American Psychological Association will be found on pp. 45-48 of this number of the BULLETIN.)

PSYCHOLOGICAL LITERATURE.

CALCULUS OF PROBABILITY.

Le calcul des probabilités et la méthode des majorités. EMILE BOREL. Année Psychologique, 1908, XIV., 125-158.

The procedure of regarding the views expressed by the majority of a group as practically true for this group, is called the method of majorities. It is best illustrated by an example given by the author. The photographs of 40 children, of whom 17 were normal and 23 backward, were shown to 20 subjects, who had to state whether the picture represented a normal or a backward child. The percentages of correct judgments varied from 67 to 92 per cent. and their average was 78 per cent. From these data alone one may conclude that the pictures—or at least some of them—gave an indication as to the intelligence of the children, but this conclusion can be made considerably more definite by the application of the calculus of probabilities. The author starts by asking what results one would have to expect, if the judgments were mere guesses. The difference between the number of correct judgments which were given on 27 photographs (or approximately two thirds of all the cases) and the number of correct judgments which one would obtain by random guessing, is so great that it cannot be attributed to chance, whereas the judgments on the remaining 13 pictures are such that they may be a coincidence due to random guesswork. From this one must conclude that in two thirds of all the cases a certain influence was at work which tended to produce correct judgments, and it is only reasonable to suppose that this was the inspection of the pictures which gave some indication as to the intelligence of the person represented. Since no such influence can be shown for the remaining third of the pictures one must conclude that traces indicating the intelligence were absent in these pictures.

A further application of this method is made in a study of the relation of the form of the hand to intelligence. Pictures of the hands of children were shown to different observers, who had to decide whether the hand belonged to a male or a female, and whether the child was bright or dull. The agreement of the judgments is not as well marked as in the first example, but here also it is possible to

show an influence which determines the judgment. Binet made the hypothesis that the child is judged stupid if the thumb is short and ugly, whereas it is judged intelligent if the thumb is long and slender. This hypothesis is confirmed by further experiments, in which the observers had to base their judgment on this criterion exclusively. The calculus of probabilities thus enables one to show the presence of a cause, but it does not give any indication as to what this cause may be. A hypothesis as to the nature of this cause must be the result of experience and must be verified by further experiments, and here again the calculus of probabilities enables one to form a judgment as to the value of the hypothesis. Mathematical deductions are only the connecting link between two experiments, but this part of guiding the investigation is, though modest, of the highest utility.

The bearing of Professor Borel's deduction on the questionnaire method is obvious, and it may be hoped that his principles will give to this method the precision and elegance which have hitherto been lacking in some of the investigations using the questionnaire. The author's views about the rôle which mathematical reasoning may play in psychological experiments are sound and in perfect agreement with the spirit of statistical investigations. The demonstration that certain events are or are not such as they probably would be if they were chance events warrants the conclusion as to the presence or absence of a knowable cause, but does not give an indication of what this cause may be. This is the way of reasoning applied in all such cases ever since Laplace's demonstration that the orbits of the planets are not the work of chance. Borel's analysis of the method of majorities has the merit of reducing a method which was rather doubtful and led to loose results, to sound and well-established principles.

The author tries to apply his ideas to the method of right and wrong cases and uses for illustration the example given in Titchener's *Manual* ('Student's Manual,' p. 107), combining the results for the two time orders. He imagines a set of results similar to these, but which was not obtained from one individual but from a group of 100 individuals, each one of which gave a judgment on the comparison of the standard with the seven comparison stimuli, and tries to determine the collective sensitivity of the group. After having determined the point of subjective equality as that intensity of the comparison stimulus on which 'greater' and 'smaller' judgments are given in equal number, the author defines the upper and lower threshold as those intensities of the comparison stimulus for which one can conclude with a high probability that the standard is smaller or greater than the comparison stimu-

lus. These values are found by interpolation. The difference between Titchener's results and the results obtained by the author is considerable. The author sees that the cause of this discrepancy is a difference of the definition of the threshold, and explains it by his intention to determine the collective, not the individual sensitivity as Titchener does.

Borel's definition of the threshold is closely related to the one given by Scripture, which is even a little more definite in so far as Scripture asks for a certain high probability (the so-called statistical certainty) with which certain judgments may be expected. Leaving aside the objection that the notion of collective sensitivity is not very well defined, we certainly could not expect to determine it by other means than individual sensitivity. Here the author misses an important point apparently on account of his not being thoroughly conversant with the problems of psychophysical measurement. The fundamental definition of the threshold is the one supplied by the method of just perceptible differences, and no measurement of the accuracy of sense perception is acceptable unless the relation of the proposed measurement to the result of this method is shown. The difficulty of the method of constant stimuli lies, therefore, in part in the method of just perceptible differences. There are very numerous possibilities of defining the threshold so far as the method of constant stimuli is concerned, but since it was demonstrated that the method of just perceptible differences determines the interval inside of which the judgments 'greater' and 'smaller' have probabilities smaller than one half, no measurement of the accuracy of sense perception can be accepted unless it uses this quantity or quantities related to it.

In the course of his argument the author calls Titchener's calculations 'rather long and very correct.' These words, of course, refer not only to the numerical calculations but also to the algorithm of Müller's method of constant stimuli. The deductions in Müller's method are perfectly correct except the formula for the determination of the weight of the observation equations, which, however, is not given in Titchener's *Manual*. This formula is incomplete and the numbers in the table of Müller's Coefficients of Weights (Titchener, *loc. cit.*, p. 101) are false, as the eminent mathematician certainly would have seen had he looked into this matter.

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BOOKS RECEIVED FROM JANUARY 5 TO FEBRUARY 5.

- Die Kindersprache.* C. and W. STERN. Leipzig, Barth, 1907. Pp. 394. M. 11.
- Erinnerung, Aussage und Lüge in der ersten Kindheit.* C. and W. STERN. The same, 1909. Pp. vi + 160. M. 5.
- Report of the Commissioner of Education (to June 30, 1907).* Vol. II. Washington, Gov. Print. Office, 1908. Pp. 523-1214.
- Physiological and Medical Observations among the Indians of Southwestern United States and Northern Mexico.* Bureau Amer. Ethnology. Washington, Gov. Print. Office, 1907. Pp. x + 460.
- Mélanges d'Histoire des Religions.* H. HUBERT and M. MAUSS. Paris, Alcan, 1909. Pp. xli + 236. 5 fr.
- Premier Congrès international de Psychiatrie, de Neurologie, de Psychologie et de l'Assistance des Aliénés, Amsterdam, 2-7 Septembre, 1907.* Amsterdam, de Bussey, 1908. Pp. lx + 934.
- The Psychological Phenomena of Christianity.* G. B. CUTTEN. New York, Scribners, 1908. Pp. xviii + 497.
- Introduction to the Genetic Treatment of the Faith Consciousness.* (Diss. J. H. U.) W. W. COSTIN. Baltimore, Williams and Wilkins, 1909. Pp. 47. \$.65.
- The Effect of Constant Stimulus upon Touch Localization.* L. A. LURIE. (Univ. of Cincin. Studies. Ser. II., Vol. IV., No. 1.) Cincinnati, Univ. Press, 1908. Pp. 49.
- National Education Association—Journal of Proceedings and Addresses of the Forty-sixth Annual Meeting, held at Cleveland, Ohio, June 29-July 3, 1908.* Winona (Minn.), Publ. by the Assoc., 1908. Pp. xii + 1251.
- The Psychology of Singing.* DAVID C. TAYLOR. New York, Macmillan, 1908. Pp. xix + 373.
- Recherches expérimentales sur le dessin des écoliers de la Suisse romande.* E. IVANOFF. Genève, Kündig, 1908. Pp. 64. Fr. 3.
- Expériences sur le rôle de la récitation comme facteur de la mémorisation.* D. KATZAROFF. (Repr. fr. Arch. de Psychol., VII., 225-258.) Genève, Kündig, 1908. Fr. 1.25.
- Die Methoden der tierpsychologischen Beobachtungen und Versuche.* E. CLAPARÈDE. (Repr. fr. Ber. ü. d. III. Kongress f. exper. Psychol.) Leipzig, Barth, 1909. Pp. 37.

NOTES AND NEWS.

THE second International Course for Legal Psychology and Psychiatry will be held at Giessen, Germany, April 13 to 18. The 'course' will be under the direction of Professor Sommer (Giessen), with the coöperation of Professors Mittenmaier and Dannemann (Giessen) and Professor Aschaffenburg (Cologne).

THE Neurological Institute of Frankfort-on-Main has arranged, in connection with the Frankfort Special Classes (Hilfschüle), a two-weeks course in 'Problems concerning Feeble-minded and Psychopathic Children,' to be given the latter part of June. Scientific research, clinics, psychology, education and methods, and forensic questions will be the subjects of lectures and courses by specialists. A number of institutions will be visited. The course is intended for those who are professionally engaged in this work or interested in it, or who wish to prepare for it. The detailed program will appear in the spring. (*Committee*: Dr. H. Vogt, Neurologisches Institut; Rector A. Henze, Wiesenhüttenschule.)

WE note with regret the death on December 31 of Dr. J. P. Gordy, professor of the history of education in New York University and author of several works on psychology.

WE have received the announcement of a new journal, *Rivista di Filosofia Neoscolastica*, to be edited by G. Canella and A. Gemelli (quarterly, beginning January 15, 1909: Florence, Libreria Editrice Fiorentina).

THE date of the International Congress of Psychology during the coming summer has been fixed for August 3-7.

ANNOUNCEMENT.

THE REVIEW has in preparation the matter for a 'Darwin' issue, devoted to Charles Darwin's influence upon the mental and moral sciences and philosophy. It will take the place of one of the regular issues (either May or July).